

Application Serial No. 10/773,798
Reply to office action of March 24, 2005

PATENT
Docket: CU-4114

Amendments To The Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (currently amended) An apparatus for ~~automatically~~ opening and ~~shutting~~ closing a drain valve in a washstand, ~~wherein~~ having a hole to which a drain-pipe is connected ~~to the bottom of the washstand, and the top of the drain-pipe, i.e., a drain-outlet is opened and shut by a drain-valve built in the drain-pipe, the~~ apparatus comprising:

the drain valve having a cap for preventing liquid flow through the hole into the drainpipe and an elongated rod having a first end connected to the cap and a second end disposed inside the drainpipe,

a ~~deceleration~~ motor having a motor shaft formed outside at one side of the drainpipe;

a ~~working~~ circular cam ~~closely~~ contacting the ~~bottom~~ second end of the elongated rod of the drain valve inside the drain pipe and being connected to the motor shaft through the drainpipe,

wherein the ~~working~~ cam is mounted inside the drainpipe to come in contact with the liquid flowing through the drainpipe, and

wherein the cam is driven by the motor to rotate to exert axial force on the second end of the elongated rod by which

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the elongated rod is actuated opposite the bias force to move the cap to a plurality of predetermined positions with respect to the hole of the washstand is disposed on the axis of the deceleration motor; and

a switch for initiating the movement of the cap to a plurality of predetermined positions with respect to the hole of the washstand; touch button for turning on/off the deceleration motor, wherein the touch button is disposed at a predetermined portion of the washstand.

a spring for providing a bias force on the elongated rod so that the cap is actuated to fit into the hole to close the drain valve when the switch is in the off state;

a upper spring housing; and

a lower spring housing,

wherein the upper spring housing and the lower spring housing are fitted together to form an inner cylindrical opening and an outer cylindrical opening,

wherein the fitted inner and lower spring housing are mounted inside the drainpipe such that the outer cylindrical opening allows liquid flow therethrough,

wherein the inner cylindrical opening receives a portion of the elongated rod and the spring wrapping around the portion of the elongated rod inside the inner cylindrical opening, and

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wherein the spring is housed inside the inner cylindrical opening to exert force on the elongated rod by which the cap of the drain valve is closed during the off state.

2. (cancelled)
3. (new) The apparatus for opening and closing a drain valve in a washstand as claimed in claim 1, wherein the switch has a on or off state.
4. (new) The apparatus for opening and closing a drain valve in a washstand as claimed in claim 3, such that, when the switch is set to the on state, the cam is actuated by the motor such that the cap is moved away from the hole to open the drain valve.
5. (new) The apparatus for opening and closing a drain valve in a washstand as claimed in claim 4, further comprising a cam support plate connected to the second end of the elongate rod and in contact with the cam.